

- Claims -

1. A device for filtering ferromagnetic material from a fluid in which said material is suspended, comprises a magnet (2) and a pair of metal plates (5, 6), said magnet (2) having faces (3, 4) of opposite magnetic polarity, said plates (5, 6) being disposed in abutment with said faces (3, 4) respectively, each plate having a plurality of recesses (7, 8) about an outer perimeter (9, 10) of each plate (5, 6) to form radially extending magnetic pole pieces (11, 12), which extend beyond an outer perimeter of the magnet faces, said plates (5, 6) being oriented so that the recesses (7) and pole pieces (11) on one plate (5) are axially aligned with those recesses (8) and pole pieces (12) on the other plate (6), wherein axially opposite recesses (7, 8) define passage means for said fluid and also regions from which ferromagnetic material is repelled, and wherein said pole pieces (11, 12) define regions to which ferromagnetic material is attracted and retained, said device being further provided with a distribution plate (21) having a plurality of apertures (24) which are axially alignable with said recesses (7, 8), said apertures (24) being the only passage means of fluid to said metal plates (5, 6), characterised in that the distribution plate (21), the magnet (2) and said metal plates (5, 6) are each provided with an aperture which is adapted to receive a tube (20) through which fluid can pass, said tube providing means for isolating, within the device, fluid passage in the tube from fluid flow through the recesses (7, 8).
2. A device as in claim 1, characterised in that each recess (7, 8) and an outer edge of each pole piece (11, 12) is further provided with one or a plurality of slots (15).
3. A device as in claims 1 to 2, characterised in that the outer edges of axially facing pole pieces (11, 12) are curved towards one another.
4. A device as in claims 1 to 3, characterised in that means are provided for ensuring that said recesses (7, 8) and said apertures (24) are maintained in axial alignment.

5. A device as in claims 1 to 4 characterised in that the distribution plate (21) is made of a non-ferromagnetic material.

6. A device as in claims 1 to 5 characterised in that the magnet (2) is made of a material which will generate a magnetic field between the metal plates (5, 6) which is strong enough to attract ferromagnetic material from fluid passing therebetween.

7. A device as in claims 1 to 6 characterised in that the metal plate (5) which is impinged first by fluid flow through the device, is thicker than the other metal plate (6) through which fluid leaves the device.

8. A device as in claims 1 to 7 characterised in that an outer face of the tube (20) is provided with a recess (31) which can receive retaining means (32) which is able to keep the distribution plate (21) in abutment with the axially closer of said metal plates (5).

9. A device as in claims 1 to 8 characterised in that a housing is further provided, which is adapted at one end to be received by a containing means of said fluid, said containing means having an input means and an output means, the housing being adapted at the other end to receive a filter of known type, an output of which known filter is continuous with the tube (20) in the magnetic filter device and also the input means to the containing means, said output means from the containing means being continuous with the apertures (24) in the distribution plate (21) and the recesses (7, 8) in the metal plates (5, 6).

10. A device as in claim 1 characterised in that two distribution plates are disposed either side of each of the metal plates, each distribution plate having a plurality of apertures which are axially alignable with said recesses, said apertures being the only passage means of fluid to said metal plates, the apertures in both distribution plates providing inlet and outlet means for bi-directional axial flow of fluid.

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11. A magnetic filter device for filtering ferromagnetic material from a fluid in which said material is suspended, comprises a known filter (35), a magnet (2) and a pair of metal plates (5, 6), said magnet (2) having faces (3, 4) of opposite magnetic polarity, said plates being disposed in abutment with said faces respectively, each plate (5, 6) having a plurality of recesses (7, 8) about an outer perimeter of each plate (5, 6) to form radially extending magnetic pole pieces (11, 12), which extend beyond an outer perimeter of the magnet faces, said plates (5, 6) being oriented so that the recesses (7) and pole pieces (11) on one plate (5) are axially aligned with those recesses (8) and pole pieces (12) on the other plate (6), wherein axially opposite recesses (7, 8) define passage means for said fluid and also regions from which ferromagnetic material is repelled, and wherein said pole pieces (11, 12) define regions to which ferromagnetic material is attracted and retained, said known filter having passage means for said fluid which is continuous with fluid passage through said recesses, said device being further provided with a distribution plate (21) having a plurality of apertures (24) which are axially alignable with said recesses (7, 8), said apertures (24) being the only passage means of fluid to said metal plates (5, 6), characterised in that the distribution plate (21), the magnet (2) and said metal plates (5, 6) are each provided with an aperture which is adapted to receive a tube (20) through which fluid can pass, said tube providing means for isolating, within the device, fluid passage in the tube from fluid flow through the recesses (7, 8).

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